

WHAT IS CLAIMED IS:

1. An image capturing device, comprising:

a solid image capturing element having a plurality of light receiving pixels arranged in a matrix, for accumulating information charges therein, the light receiving pixels in an odd-numbered line being alternately correlated to a first color component and a second color component and the light receiving pixels in an even-numbered line being alternately correlated to 10 the second color component and a third color component, the light receiving pixels being connected to a plurality of vertical shift registers, outputs from the plurality of vertical shift registers being respectively coupled to respective bits of a horizontal shift register, an output from the horizontal shift register being 15 coupled to an output section;

a driving circuit for transferring the information charges accumulated in the plurality of light receiving pixels from the plurality of vertical shift registers to the horizontal shift register, for combining, during a process of transferring the 20 information charges, the information charges for every k-number of lines (k being a natural number) to thereby create a first combined charge and a second combined charge which are alternately accumulated in the respective bits of the horizontal shift register, the first combined charge being a combination of the first 25 color component and the second color component, the second combined charge being a combination of the second color component and the third color component, and for accumulating the first combined

charge and the second combined charge, sent from the horizontal shift register in the units of one bits, for m-number of bits (m being a natural number, either k or m being larger than one) in the output section to thereby create a first output, a second 5 output, and a third output, the first output being a combination of the first color component, the second color component, and the third color component weighted according to a first ratio, the second output being a combination of the first color component, the second color component, and the third color component weighted according to a 10 first ratio, and the third output being a combination of the first color component, the second color component, and the third color component weighted according to a third ratio;

a sample hold circuit for sampling an output from the solid 15 image capturing element to produce a first image signal in response to the first output, a second image signal in response to the second output, and a third image signal in response to the third output; and

a signal processing circuit for applying predetermined signal 20 processing to an image signal produced by the sample hold circuit, wherein

the signal processing circuit generates color component signals respectively expressing the first color component, the second color component, and the third color component, using the 25 first image signal, the second image signal, and the third image signal.

2. The image capturing device according to claim 1, wherein the first color component, the second color component, and the third color component are three optical primary colors, that is, red, green, and blue, and the second color component is green.

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3. The image capturing device according to claim 1, wherein the information charges are combined for every three lines and the combined charges held in three bits of the horizontal shift register are accumulated in the output section.

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4. The image capturing device according to claim 1, wherein the information charges are combined for every four lines and the combined charges held in four bits of the horizontal shift register are accumulated in the output section.

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5. An image capturing device, comprising:

a solid image capturing element having a plurality of light receiving pixels arranged in a matrix, for accumulating information charges therein, the light receiving pixels in an odd-numbered line being alternately correlated to a first color component and a second color component and the light receiving pixels in an even-numbered line being alternately correlated to the second color component and a third color component, the light receiving pixels being connected to a plurality of vertical shift registers, outputs from the plurality of vertical shift registers being respectively coupled to respective bits of a horizontal shift register, an output from the horizontal shift register being

coupled to an output section;

a driving circuit for transferring the information charges accumulated in the plurality of light receiving pixels from the plurality of vertical shift registers to the horizontal shift register, for combining, during a process of transferring the information charges, the information charges for every k-number of lines (k being a natural number) to thereby create a first combined charge and a second combined charge which are alternately accumulated in the respective bits of the horizontal shift register, the first combined charge being a combination of the first color component and the second color component, the second combined charge being a combination of the second color component and the third color component, and for accumulating the first combined charge and the second combined charge, sent from the horizontal shift register in the units of one bits, for m-number of bits (m being a natural number, either k or m being larger than one) in the output section to thereby create a first output, a second output, and a third output, the first output being a combination of the first color component, the second color component, and the third color component weighted according to a first ratio, the second output being a combination of the first color component, the second color component, and the third color component weighted according to a second ratio, and the third output being a combination of the first color component, the second color component, and the third color component weighted according to a third ratio;

a sample hold circuit for sampling an output from the solid

image capturing element to produce a first image signal in response to the first output, a second image signal in response to the second output, and a third image signal in response to the third output; and

5       a signal processing circuit for applying predetermined signal processing to an image signal produced by the sample hold circuit, wherein

the signal processing circuit generates a color component signal which approximates at least one color component among the  
10 first color component, the second color component, and the third color component, using the first image signal, the second image signal, and the third image signal.

6.      The image capturing device according to claim 5, wherein the  
15 first color component, the second color component, and the third color component are three optical primary colors, that is, red, green, and blue, and the second color component is green.

7.      An image capturing device, comprising:

20       a solid image capturing element having a plurality of light receiving pixels arranged in a matrix, for accumulating information charges therein, the light receiving pixels in an odd-numbered line being alternately correlated to a first color component and a second color component and the light receiving  
25 pixels in an even-numbered line being alternately correlated to the second color component and a third color component, the light receiving pixels being connected to a plurality of vertical shift

registers, outputs from the plurality of vertical shift registers being respectively coupled to respective bits of a horizontal shift register, an output from the horizontal shift register being coupled to an output section;

5        a driving circuit for transferring the information charges accumulated in the plurality of light receiving pixels from the plurality of vertical shift registers to the horizontal shift register, for combining, during a process of transferring the information charges, the information charges for every two lines  
10      to thereby create a first combined charge and a second combined charge which are alternately accumulated in the respective bits of the horizontal shift register, the first combined charge being a combination of the first color component and the second color component, the second combined charge being a combination of the  
15      second color component and the third color component, and for accumulating the first combined charge and the second combined charge, sent from the horizontal shift register in the units of one bits, for two bits in the output section to thereby create a first output and a second output, the first output being in  
20      according with an amount of the first combined charge or the second combined charge and the second output being in accordance with an amount of the first combined charge and the second combined charge;

          a sample hold circuit for sampling an output from the solid image capturing element to produce a first image signal in response  
25      to the first output and a second image signal in response to the second output and

          a signal processing circuit for applying predetermined signal

processing to an image signal produced by the sample hold circuit,  
wherein

the signal processing circuit generates a first color component signal which approximates the first color component or  
5 the third color component, using the first image signal, and a second color component signal which approximates the second color component, using the second image signal.

8. The image capturing device according to claim 7, wherein the  
10 first color component, the second color component, and the third color component are three optical primary colors, that is, red, green, and blue, and the second color component is green.